

Reading Assignment 7: Descartes and Galileo on Motion

ASSIGNED READING

- Descartes. *Principles of Philosophy*. Part II. Articles 36-45. In R. Descartes. *The Philosophical Writings of Descartes*. Ed. by J. Cottingham, R. Stoothoff, and D. Murdoch. Vol. 1. Cambridge University Press, 1984. Vol. 1. Pages 240-244.
- Galileo. "Dialogue Concerning the Two Chief World Systems." In M. Oster. *Science in Europe, 1500-1800: a primary sources reader*. Palgrave, 2002. Pages 77-82.

DUE DATE

Please bring a typed, hard copy of your answers to class on Thursday, January 26th, 2017.

TECHNICAL REQUIREMENTS

Answer questions one, three, five, and seven below. Together, your answers should not be longer than a single typed page. Remember to provide page numbers indicating which passages you are paraphrasing. For the remaining optional questions, please write down the page numbers on which the authors address the question.

QUESTIONS

1. According to Descartes, what is relationship between God's perfection and
 - (a) conservation of "motion?"
 - (b) the hypothesis that "what is once in motion always continues to move?"
2. According to Descartes, what do we learn in our "earliest years" and why does it conflict with his first law of nature?
3. Descartes argues that, if a projectile were not slowed by air, it would continue to move indefinitely. What types of evidence does Descartes offer to a layperson to convince the person that air can resist and slow an object down?
4. Does Descartes defend his third law of nature using experiments or observations? Explain in no more than a paragraph.
5. In Galileo's dialogue, what does Simplicio (abbreviated "Simp") claim will happen if a heavy stone is dropped from the mast of a rapidly moving ship? Salvedo claims that Simplicio's description of the outcome of the ship experiment is wrong. Has Salvedo conducted the ship experiment several times to make sure?
6. What do Simplicio and Salvedo agree would be the effect of pushing a perfectly spherical ball on a polished steel surface plane that is parallel to the ground, assuming the air does not resist it? Will it keep a constant speed, accelerate, or decelerate? Will the ball stop or continue to move?
7. According to Salvedo, if a polished steel surface plane parallel to the ground stretched indefinitely, what shape would it form? How is the motion of the ball on such a plane, therefore, analogous to the movement of a ship?
8. In no more than a paragraph, explain Simplicio's second objection to Salvedo's conclusion about the ship experiment, and explain Salvedo's response.
9. To consider for class: Are Galileo's conclusions about the motion of the ball on a spherical surface incompatible with Aristotle's theory of motion and natural place? Why or why not?

REFERENCES

- [1] R. Descartes. *The Philosophical Writings of Descartes*. Ed. by J. Cottingham, R. Stoothoff, and D. Murdoch. Vol. 1. Cambridge University Press, 1984.
- [2] M. Oster. *Science in Europe, 1500-1800: a primary sources reader*. Palgrave, 2002.